Cyrstal Lake, Illinois
Watershed Districts
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Zoning Ordinance
Adopted 1977

Zoning Ordinance Amendments
[The zoning ordinance is hereby amended as, follows:

(12.5.4) Crystal Lake Watershed Land-Use

Practices and Management Policies This section presents the Crystal Lake Watershed water resources and land-use management policies and practices that will be pursued to protect the natural hydrological and water quality management system of the Crystal Lake Watershed from harmful effects of urbanization. The intent is to provide performance guidelines for use in reviewing development plans, designating land-use management areas, and specifying service utilities systems. The policies are:

(a) The natural groundwater flow hydraulics of the Crystal Lake Watershed shall be preserved.
(b) Urban developments shall be designed to preserve present natural drainage patterns and local groundwater recharge conditions. In essence, this requires that all drainage systems be designed to recharge to the groundwater as closely as possible to the point where stormwater falls. No surface drainage system flowing directly to Crystal lake shall be allowed.
(c) Stormwater management systems for developed areas shall be designed to protect the quality of surface and groundwater discharges.
(d) Development intensities and associated local area drainage design shall be restricted to those plans with natural surface drainage management systems capable of complete local recharge of the 100-year design storm.
(e) Natural areas of runoff detention and ground-water recharge shall be protected from urban development. Removal or the changing of character and/or relationship of these soils is prohibited.
(f) Water supply systems using only the bedrock aquifers shall be required for all urbanized areas of the Crystal lake Watershed where sewage collection systems are to be provided.
(g) [Leak-tight designs shall be used In sanitary sewer construction to minimize stormwater and groundwater infiltration.
(h) Septic tank disposal systems shall be prohibited in the outwash soil area, with the exception of existing farming activities.

(12.5-9) Crystal Lake Watershed Development Standards and Criteria

The basic objectives of the facilities design standards and criteria are to maintain the total quantity, rate, location, and quality of watershed flow and to preserve the integrity of Crystal

Lake. All sanitary sewage, water supply, and drainage systems constructed in the Crystal lake Watershed must meet the specifications and design criteria established by the Crystal Lake Watershed Resources Management Study, Chapter VI, p.3-7, which was accepted by the city of Crystal Lake. These specifications and design criteria supplement existing engineering requirements for sewer, water and drainage systems.

Any proposed conditions from these standards must continue to meet the following management

objectives:

(1) Direct surface discharge of watershed runoff to Crystal lake or to drainageways and storm sewers leading to the lake shall be eliminated where they exist and avoided in the future.
(2) No surface or subsurface water resources originating within the Crystal Lake Watershed and naturally tributary to the lake shall be diverted from the watershed prior to flowing through the lake.
(3) Because the shallow aquifer at present regulates recharge flows to Crystal lake all stormwater drainage systems shall be designed to preserve undeveloped local recharge rates to this aquifer.
(4) Surface and subsurface discharges to Crystal lake shall meet the quality standards given to Chapter IV, Watershed Resources Management Study. Total phosphorous, the limiting nutrient affecting the lake; shall be minimized as much as possible.

(12.5-il) Impervious Surface Determination and Policy

In any development proposal for the watershed districts where the soils fall into more than one environmental management zone as defined in the Crystal Lake Watershed Management Study, Chapter V; pp.5-9, the allowable impervious coverage shall be calculated separately for each management zone. The total of these calculations will be the total allowable impervious coverage for the proposed development. Location of the separately calculated allowable impervious coverage shall be located on that portion of each management zone best suit to urbanization according to the recommendations of the Crystal Lake Watershed Resources Management Study.

Appendix C-3

Watershed Protection Provisions
Crystal Lake, Illinois, 1977

Comprehensive Plan Amendments
[The comprehensive plan shall be amended to include the following subsection:
Section IV (F). Crystal Lake Watershed Area and Boundaries

(1) That an area defined by the city of Crystal Lake, Illinois, as being the primary recharge source for the lake known as Crystal Lake is hereby recognized as the Crystal Lake Watershed.
(2) That the Comprehensive Plan is amended to include guidelines for development within

the Crystal Lake Watershed.

Purpose

The purpose of the watershed districts is to establish areas of controlled land~use practices and management policies that will regulate development within the Crystal Lake Watershed through designation of zoning districts in which land will be classified in order to protect the water quality and the natural recharge conditions of the watershed. By protecting the water quality and the natural recharge conditions of~the watershed, recreational and aesthetic values of the land will be maintained, the water supply will be protected, groundwater levels will be maintained, the natural beauty and processes of the lake will be preserved, and, in general, the public health and welfare of the community will be protected. Development within the districts will be carefully examined and controlled to ensure that these conditions are maintained. Planned unit developments are encouraged. No development will be permitted in the districts that would have an adverse effect upon these conditions.

Objectives

The following objectives may be achieved by defining the Crystal Lake Watershed and controlling development within the area:

(1) Preserve and improve the quality of the lake water and natural beauty of the lake and its surroundings.
(2) Conserve natural conditions, wildlife, and open spaces for the education, recreation, and general welfare of the public
(3) Protect the Crystal lake aquifer recharge conditions, both the quantity and the controlled discharge rate, and preserve the naturally regulated flow dynamics of the aquifer supplying Crystal lake.
(4) Improve the quality of the surface and subsurface discharges to the lake by limiting nutrients and other contaminants.
(5) Reduce the amounts of accumulated in-place nutrients contained in Crystal lake's sediments.
(6) Regulate urban and rural watershed land use practices so that they will be consistent with optimum water resource protection.

Location

The Crystal Lake Watershed encompasses the following environmental zones:

(1) Marsh-wetland;
(2) High water-table outwash and muck;
(3) Deep water-table outwash;
(4) Morainal slope; and,
(5) Existing urbanized area.

These zones were classified by the Crystal Lake Watershed Resources Management Study, which was accepted by the city of Crystal lake

Watershed Management Policies and Land-Use Practices

The following are management policies and land-use practices designed to protect the natural hydrological' and water-quality management system of the Crystal Lake Watershed from harmful effects of improper use and development. These policies and practices are as follows:

(1) The natural groundwater flow hydraulics of the watershed shall be preserved and groundwater levels maintained.
(2) Urban development shall be designed to preserve present natural drainage patterns and local groundwater recharge conditions, requiring that drainage systems be designed to recharge groundwater within the watershed without direct overland flow exceeding present conditions.
(3) Stornwater management systems for developed areas shall be designed to protect the quality of surface and groundwater discharges.
(4) Development intensities and associated local drainage design shall be restricted to those plans with natural surface drainage management systems of complete local recharge within the watershed of the 100-year design storm.
(5) Natural areas of runoff detention and groundwater recharge shall be protected from urban development.
(6) Water supply systems using only bedrock aquifers shall be required for all urbanized areas of the watershed where sewage collection systems are to be provided..
(7) leak-tight designs shall be used in sanitary sewer construction to minimize stormwater and groundwater infiltration and contamination.
(8) Septic tank disposal systems shall be prohibited in the out-wash soils area, with the exception of existing fanning activities.

Crystal Lake Watershed Development Standards

All sanitary sewage, water supply, and drainage
systems constructed In the watershed must meet the specifications and design criteria established by the Crystal Lake Watershed Resources Management Study, which was accepted by the city of Crystal Lake All other ordinances of the city of Crystal Lake regulating development that are not in conflict with the Crystal Lake Watershed Resources Management Study remain in effect.

Zones

The following are land-use restrictions for each zone as established by the Crystal Watershed Resources Management Study, which was accepted by the city of Crystal Lake

(1) Marsh-wetland. The marsh-wetland area is a vital hydrological adjunct to Crystal Lake. It is an overspill area. Because the water holding capacity of its soil and vegetation is so high, It serves as a "sponge" that controls water quantity. In passing through the marsh, the water is filtered by the vegetation and so improved in quality. Any attempt to drain and fill the marsh

would seriously disrupt the hydrological balance of the watershed. This should be zoned W-l Watershed District 1-Marsh-Wetland-Special Critical Hazard Zone. This area should not be urbanized.

(2) Shallow Water-Table Outwash. This Zone contains soil types of peat and muck, Poorly drained tills, poorly drained outwash, and well-drained outwash. Urbanization would likely produce irreversible negative impacts on Crystal Lake. If urbanization were permitted, positive drainage facilities would be necessary to lower the water table or to carry runoff away from the developed area to protect building foundations. Such procedures would require a direct surface outlet to the lake, which is not recommended. The preponderance of poorly drained soils compounds the problem of developing drainage facilities capable of controlling pollutant discharges and surface runoff. This should be zoned W-2 Watershed District 2-Fanning.
(3) Deep Water-Table Outwash. This zone comprises approximately 1,000 acres of relatively permeable surface soils overlying highly permeable sands and gravels. The water table is typical at least 10 feet below the surface; the topography is relatively flat. The underlying sands and gravels are a critical recharge unit of the Crystal Lake system. Controlled urbanization is possible here, but the amount of land covered with impervious surfaces must be restricted in order to preserve the existing subsurface recharge pattern. The range of soil percolative capacities expected from most soils in this zone indicates that no more than 20 percent of the land be covered with impervious surfaces. Within this 20 percent Limit, natural drainage systems are capable of achieving recharge of all surface runoff locally. Within this limit, the soils can filter potential pollutants from the runoff of developed areas. However, specific local drainage design techniques will be required to eliminate the need for stormwater piping systems. A public sanitary sewer system is required to prevent possible contamination of the sand and gravel aquifer recharging Crystal Lake. To avoid decreasing the quantity of water reaching the lake, water for ally development must come from bed-rock aquifers. This should be zoned W-3 Watershed District-Estate.
(4) Morainal Intensive urbanization of the morainal area would pose potentially severe environmental problems, including soil erosion. Storm water now discharges to numerous localized sinks; the water eventually percolates into the ground. Even moderate urbanization is likely to upset this delicate drainage system. Because such disruptions would necessitate a positive Storm water drainage system, continuation of the present low-intensity zoning classification of the area is to be enforced. Limiting development to large-lot estates will preserve the natural beauty and diversity of the landscape. Even with low-intensity development, development site and highway drainage must be carefully collected and recharged to preserve the present recharge conditions. The nature of the morainal soils and the distance of groundwater